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How do the students' views about the values in the 'values education program integrated into 4th grade science and technology instructional program' change before and after the delivery of the program?

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Abstract

Values lead one's preferences and behaviors. If education is broadly defined as the process leading to a behavioral change in an individual through experience, then it will not be wrong to state that instructing individuals about value education.
In this study, the differentiation degree of the students' views about the values included in the values program before and after the program is implemented. "Values Education Program Integrated into the 4th Grade Science and Technology Course"- developed by the researcher - is implemented to 35 students. Developed by the researcher, dilemma forms were utilized as an assessment tool in this study. Content analysis method is one of the qualitative data analysis methods used to determine the differentiation of the students' views
Findings indicate that values program increase levels of the students' outcomes about being open-minded, being scientific and being unbiased - to explain the advantages being open-minded and unbiased, to discuss negative statements for not being open-minded and biased, to be tolerant to the open-minded people, to discuss about the alternatives before decide, to rely on science, to discuss importance of exploring scientific reasons and to accept the unscientific knowledge which is unproven.
Such kinds of education programs aiming to raise students as independent individuals who involve in decision-taking process of the democratic society without being under control of the others should be designed around these skills. These programs should be integrated not only with the social units like instruction of social sciences, history teaching, but also with the sciences units like science and technology and mathematics.

Keywords: values education, education program, science and technology

1. Introduction

Social values are of crucial importance for an individual's life. Values are steady and deep beliefs which affect preferences of individuals for realizing a behavior and access of them to anything. Values are valuable for society and people who behave appropriate for these values are valuable in the eyes of society (Dökmen, 2000; Kohlberg and Selman, 1972; Maslow; 1968).

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Although one of the purposes of education is to "furnish students with affective behaviors", literature review yields a limited number of studies on this. Educating people at only cognitive level is incomplete and not functional. Review of the related literature reveals that various universal values considered as a significant part of solution for the problems arising daily in social relations can be improved through suitably structured value education programs (Bacanlı, 2006; Çaya, 1997; Paykoç, 2007).

Values give a direction to individuals' behaviors and preferences. According to Rokeach having done lots of research on values education; value is a belief, preference or standard (1968 Tra.: Güngör, 2000). Canatan (2004) also defines the values as the ideal targets. Values students get with values education affect firstly their families and circle of friends, then their acquaintances and at the end all the community. Science is a source of knowledge which should be completed with values as Gardner (2006) clarifies that.

This study assesses the differentiation between the views of students before and after the "Values Education Program Integrated into the 4th Grade Science and Technology Course"-developed by the researcher-over students between 10 and 11 years of age.

2. Method

Content analysis method is one of the qualitative data analysis methods used to determine the differentiation of the students' views. . Participants of this study are 35 students studying at a public school in Ankara. Students are determined randomly.

2.1. Instruments

2.1.1. Values Education Program Integrated into the 4th Grade Science and Technology Course.

The independent variable in this study is the "Values Education Program Integrated into the 4th Grade Science and Technology Course" delivered to the experimental group for 6 weeks. In setting values as aims of the value education program integrated into the 4th grade science and technology course, aims of the curriculum for the 4th and 5th Grade Science and Technology Instructional Program -defined by the Ministry of National Education- and experts' opinions were taken into account. These values are being open-minded, unbiased, and scientific. The purpose of the program is not only to endow students with some universal values, but also encourage them to think about the consequences that may emerge if they don't comply with these values. Value analysis and Kohlberg moral dilemma approach served as the basis during program design. Accordingly, the program employs some moral stories with dilemmas related to science and technology units. And then it presents moral dilemma stories about scientists' life and is intended to discuss these situations. None of the values was imposed on the students during delivery of the program. Answers by the students were not fed back as right or wrong, nothing was said about what should or should not be done, and students were left alone in creating their own values.

2.1.2. Moral Dilemma Forms

Developed by the researchers, dilemma forms were utilized as an assessment tool in this study. Designed to elicit students' responses to the situations in the stories and to determine the influence of values included in the program over the students, this form contains dilemmatic stories regarding each of three values. Necessary arrangements were made after the analysis of student answers obtained in a pilot study. Besides, interviews with students were conducted, and their responses were found to be consistent. Afterwards, the form was finalized by consulting experts' opinions and it was determined that the test was appropriate for measuring their ideas and feelings about values.

Examples from the questions;

About being open-minded;

Merve, who is Bilge's desk mate, decides to have her hair cut because they are very long and it is very difficult to look after them. She thinks that short hair suits her. Merve goes hairdresser with her mother and gets her hair cut. Next day when Merve goes to the school, Bilge sees her and thinks that short hair doesn't suit her absolutely. Just then, Merve asks Bilge's idea about her new hair.

If you were Bilge, how would you answer Merve?

About being unbiased;

Elif's flash disk which is red and very small gets lost in the school. Elif asks her flash disk to everybody in the class; she searches but cannot find it. She feels so sad. A few days later, Elif sees a flash disk which is very similar to her missing one in Metin's bag. Metin is her classmate. Instantly, her own flash disk comes back to her memory.

If you were Elif, what would you do?

About being scientific;

Murat hears from his grandmother that 'A black cat is sinister. If you see a black cat pull your hair, that time everything will be ok. Believe me because this is true.' Murat finds these words funny. One day while he comes back to home from school a black cat walks passes by him. He sees the black cat but doesn't pull his hair and then fall down sorely.

If you were Murat, what would you think about this case?

In this question, it is intended to determine that how much students rely on the unproven information.

2.2. Procedure

Before the Values Education Program Integrated into the 4th Grade Science and Technology Course was delivered, moral dilemma forms were administered to the students as a pretest. Then Values Education Program Integrated into the 4th Grade Science and Technology Course was delivered to the group for six weeks; and 2 weeks after the pretest, course moral dilemma forms were administered to the students as a posttest. After collecting pretest and posttest data, each data was grouped and tabulated under the titles of behaving compatibly with the value, behaving incompatibly with the value, being indecisive, and others. Data obtained from the pretest and posttest was analyzed separately for each student.

3. Conclusion

Moral dilemma situations included in the moral dilemma form examine students' outcome about values in the values education program. Answers are categorized into four categories- to behave accordingly about value, not to behave accordingly about value, to be undecided and others. Changes in the categories for each student have been tabulated as the descriptive statistics given below. In this section, one question for each value is examined as an example. Findings for the first question about being open-minded are given in the Table1.

Table1. Descriptive statistics for the answers to the first moral dilemma situation about being open-minded

"How is Merve's new hair?"	**Tests**	**Participant**	**n**	***%***
Your hair was beautiful but now it is not.	Pretest	D_7, D_9, D_{16}, D_{21}	4	*11,4*
(To behave open-minded)	*Posttest*	D_1, D_2, D_5, D_7, D_8, D_9, D_{10}, D_{12}, D_{13}, D_{14}, D_{15}, D_{17}, D_{18}, D_{24}, D_{25}, D_{26}, D_{27}, D_{29}, $D30$, D_{31}, D_{21}, D_{33}	22	*62,8*
Your hair is very nice.	Pretest	D_1, D_2, D_3, D_4, D_6, D_{11}, D_{12}, D_{13}, D_{15}, D_{17}, D_{19}, D_{20}, D_{22}, D_{25}, D_{26}, D_{30}, D_{32}, D_{33}, D_{34}, D_{35},	20	*57,1*
(Not to behave open-minded)	*Posttest*	D_3, D_4, D_{16}, D_{32}, D_{35}	5	*14,2*
I don't know what to say.	Pretest	D_8, D_{10}, D_{18}, D_{20}, D_{23}, D_{24}, D_{28}, D_{29}, D_{31}	9	*25,7*
(To be undecided)	*Posttest*	D_6, D_{11}, D_{19}, D_{28}	4	*11,4*
Others	Pretest	D_5, D_{27}	2	*5,7*
(*Ex. Both of them are nice.)*	*Posttest*	D_{20}, D_{22}, D_{23}, D_{34}	4	*11,4*
TOTAL			**35**	***100,0***

As it is seen in the Table 1 in the pretest 11.4 % students preferred to behave open-mindedly, that rate increased to 62.8 % in the posttest. While the rate of students preferring not to behave open-mindedly in the pretest is 57.1 %, in the posttest that rate decreases to 14.2 %. When the results of the pretest and the posttest are compared, it is seen that impact of the values education application is significantly positive. Although rate of the undecided students in the pretest is 25.7 %, it is just 11.4 % in the posttest.

None of the students has deal the advantages of being open-minded in the pretest. But in the posttest 15 out of 22 students open-minded have expressed their own opinions about that value, being open-minded reveals the real opinions. Besides in the posttest, students have agreed that being open-minded does not mean being unkind; on the contrary it provides to recognize the others. Students have expressed the advantages of being open-minded; and have discussed negative statements about it and finally concluded to be tolerant to the open-minded people. Findings for the first question about being unbiased are given in the Table 2.

Table 2. Descriptive statistics for the answers to the first moral dilemma situation about being unbiased

"Where is Elif's red flash disk?"	**Tests**	**Participant**	**N**	***%***
Metin tell me please, where did you find it from?	Pretest	D_{12}, D_{20}, D_{22}, D_{23}, D_{24}, D_{25}, D_{27}, D_{28}, D_{29}, D_{30}, D_{33}, D_{35}	12	*34,2*
(To behave unbiased)	*Posttest*	*D_1, D_2, D_3, D_4, D_5, D_6, D_7, D_{18}, D_9, D_{11}, D_{12}, D_{13}, D_{14}, D_{15}, D_{16}, D_{17}, D_{18}, D_{19}, D_{20}, D_{21}, D_{23}, D_{25}, D_{26}, D_{27}, D_{28}, D_{29}, D_{30}, D_{31}, D_{32}, D_{33}, D_{34}, D_{35}*	32	*91,4*
I must be careful; Metin is a thief I think. *(Not to behave unbiased)*	Pretest	D_2, D_3, D_6, D_7, D_8, D_{11}, D_{13}, D_{14}, D_{15}, D_{16}, D_{17}, D_{21}, D_{26}, D_{32}, D_{34}	17	*48,5*
	Posttest	*D_{22}*	1	*2,8*
I don't know what to do.	Pretest	D_1, D_4, D_5, D_9, D_{10}, D_{19}	6	*17,1*
(To be undecided)	*Posttest*	*D_{10}, D_{24}*	2	*5,7*
	Pretest		0	*0,0*
Others	*Posttest*		0	*0,0*
TOTAL			**35**	***100,0***

As it is seen in the Table 2, in the pretest 34.2 % students preferred to behave in an unbiased way, that rate increased to 91.4 % in the posttest. While the rate of students preferring to behave in a biased way in the pretest is 48.5 %, in the posttest that rate decreases to 2.8 %. When the results of the pretest and posttest are compared, it is seen that impact of the values education application is significantly positive. Although the rate of undecided students in the pretest is 17.1 %, in the posttest it is just 57 %. Except for D20, all the students exhibiting an undecided behavior in the pretest tended to be unbiased in the posttest. Findings for the first question about being scientific are given in the Table 3.

Table 3. Descriptive statistics answers from the first moral dilemma situation about being scientific

"I see a black cat! What will I do?"	**Tests**	**Participant**	**n**	***%***
I don't pull my hair when I see a black cat. (To trust the science and logic)	Pretest	D_1, D_2, D_4, D_5, D_6, D_9, D_{12}, D_{15}, D_{17}, D_{18}, D_{19}, D_{20}, D_{21}, D_{23}, D_{24}, D_{26}, D_{28}, D_{30}, D_{31}	4	*54,2*
	Posttest	*D_1, D_2, D_4, D_5, D_6, D_7, D_8, D_9, D_{11}, D_{12}, D_{13}, D_{14}, D_{15}, D_{17}, D_{18}, D_{19}, D_{20}, D_{21}, D_{23}, D_{24}, D_{25}, D_{26}, D_{27}, D_{28}, D_{30}, D_{31}, D_{33}, D_{34}, D_{35}*	22	*82,5*
When I see a black cat I pull my hair from now on. (Not to trust the science and logic*)*	Pretest	D_3, D_7, D_{10}, D_{11}, D_{13}, D_{14}, D_{16}, D_{22}, D_{32}, D_{34}, D_{35}	11	*31,4*
	Posttest	*D_3, D_{10}, D_{16}, D_{22}, D_{32}*	5	*14,2*
I don't know what to do. *(To be undecided)*	Pretest	D_8, D_{25}, D_{27}, D_{29}, D_{33}	5	*14,2*
	Posttest	*D_{29}*	1	*2,8*
	Pretest		0	*0,0*
Others	*Posttest*		0	*0,0*
TOTAL			**35**	***100,0***

As it is seen in the Table 3, in the pretest 54.2 % students preferred to trust the science and logic; that rate increased to 82.5 % in the posttest. In the pretest, the rate is not at a very low frequency, nevertheless in the posttest that rate increased as much as half of the pretest. While the rate of students preferring not to behave scientific in the pretest is 31.4 %, in the posttest that rate decreases to 14.2 %. When the results of the pretest and posttest are compared, it is seen that impact of the values education application is significantly positive. The number of undecided students in the pretest is 5, whereas it is just 1 in the posttest. These students dwelled on the importance of the causes of a case study.

Before the program, 11 students encountering with a black cat and falling down immediately after that believed to be unlucky when they see a black cat. As a result of analysis about being scientific; in the posttest richer data were obtained compared to the pretest. Various expressions of the students indicate that they created their own meanings for the values.

4. Discussion and proposals

4.1. Discussion

The findings of the study indicate that the values education program has an impact on students' adoption of various universal values and these findings are in parallel with the other research findings in the relevant literature. In the program, it is aimed not only to make students to gain several universal values but also to think over the possible negative results that may occur when they do not behave in accordance with these values. The findings of the study reveal that the program ensured a significant increase in the level of outcomes attained by the students for the values included in the program after the program is delivered. It is found that the values education program integrated into the science and technology education has caused the following improvements:

- ✓ For the value of being open-minded; an increase in the students' levels for describing advantages of being open-minded, discussing negative situations that may be resulted from not being open-minded and being tolerant to the people who are open-minded;
- ✓ For the value of being unbiased; an increase in the students' levels for describing advantages of being unbiased, discussing negative situations that may be resulted from not being unbiased, and considering the possibility of other reasons before reaching a final judgment about any situation; and
- ✓ For the value of being scientific; an increase in the students' levels for trusting in the science and logical thinking, discussing importance of exploring reasons laying behind any event, and regarding an unproven information as unscientific information..

4.2. Proposals

Such kinds of education programs aiming to raise students as independent individuals who involve in decision-making processes of the democratic society without being under control of the others should be designed around these skills rather than focusing on just content of the subject and these programs should be integrated not only into the social units like instruction of social sciences, history teaching, but also into the sciences units like science and technology and mathematics. Within the Science and Technology instructional program, it can be carried out to give all the values determined for the 4^{th} grade with similar studies which are conducted in longer terms. It is also of utmost importance to see the permanence of the values education program and to follow up the students having attended the values education program integrated into 4^{th} grade science and technology course.

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